

# WaTech's Cloud Highway Service Overview

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Presented by: WaTech's Network  
Services Division (NSD)



# What is WaTech's Cloud Highway?

Secure, high-speed connectivity from WaTech data centers to the Northwest's largest cloud exchange (Seattle)

- Enables seamless & secure access to hundreds of cloud resources & services

Leverages enterprise services & capabilities:

- Identity Management
- Managed Firewalls
- Support Services
- Cyber Security
- Network Core

# Current Cloud Hwy Use Cases

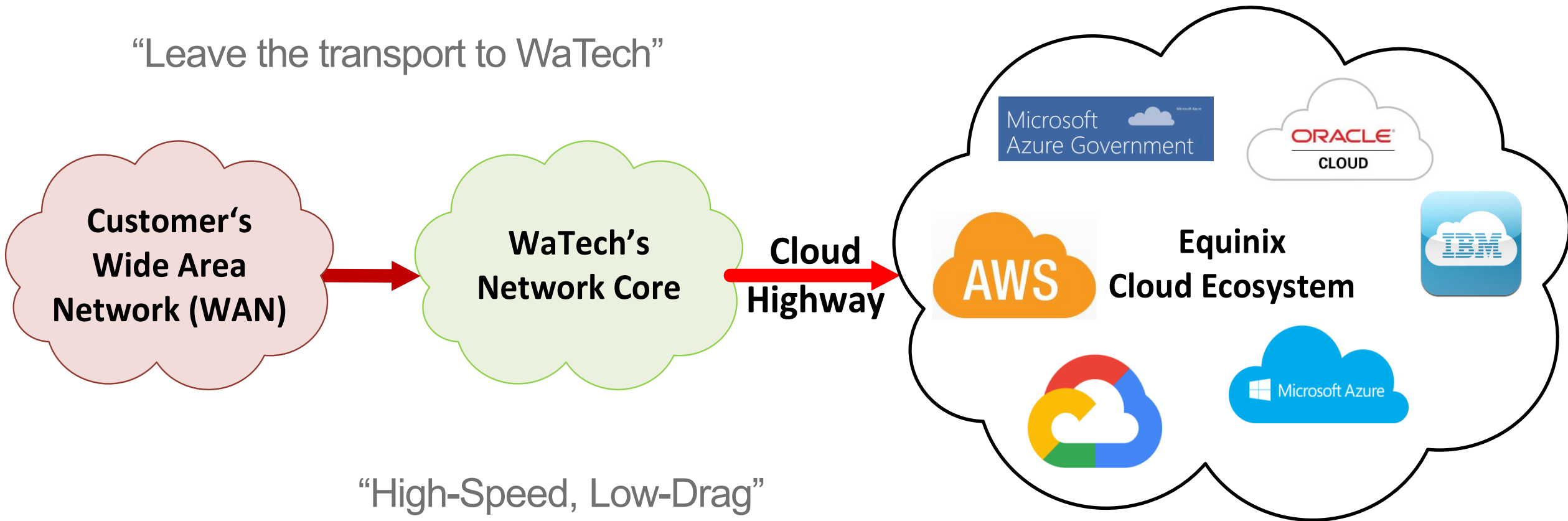
- Data Disaster Recovery (Backup Data Repository)
- Hosting Internet-Facing Applications & Services
- Application (Software) Development
- AD FS Authentication / Domain Controllers
- Proof of Concept Testing of Cloud Architecture & Design
- Various Cloud Services provided by both Microsoft & AWS
- Microsoft Identity Manager (MIM)
- Data Center Migrations (DCs in the Cloud)

# Cloud Highway Architecture Overview



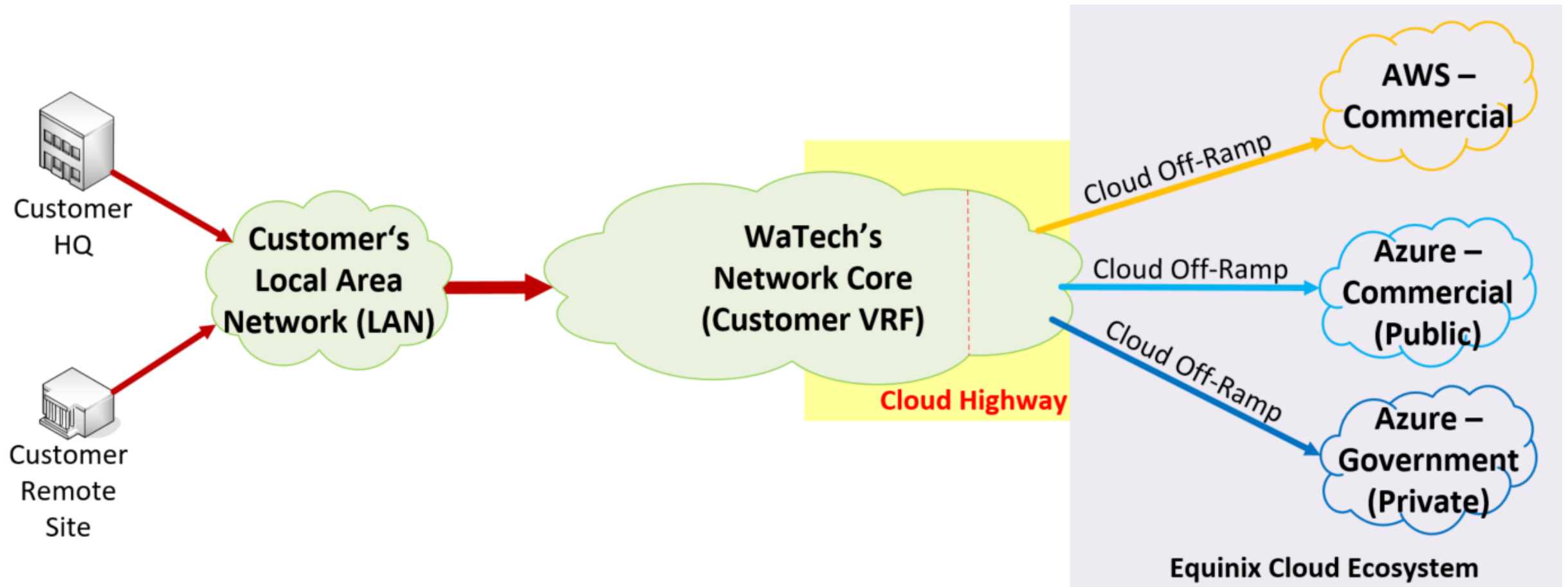
# “50,000-foot view”

“Leave the transport to WaTech”



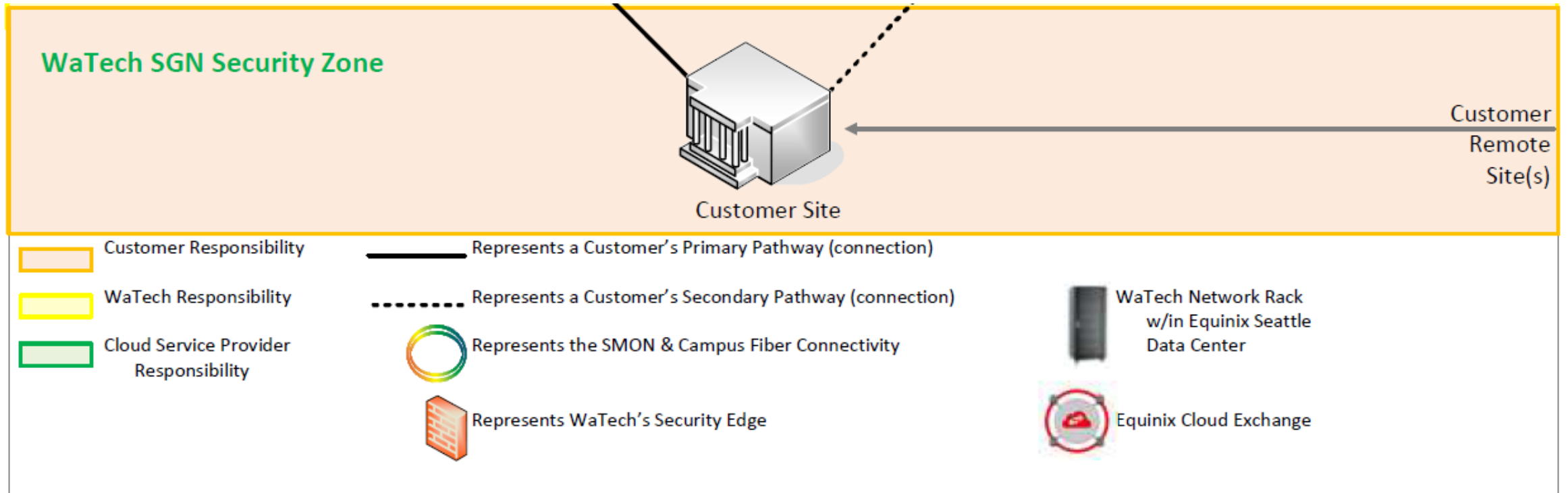
“High-Speed, Low-Drag”

# “10,000-foot view”



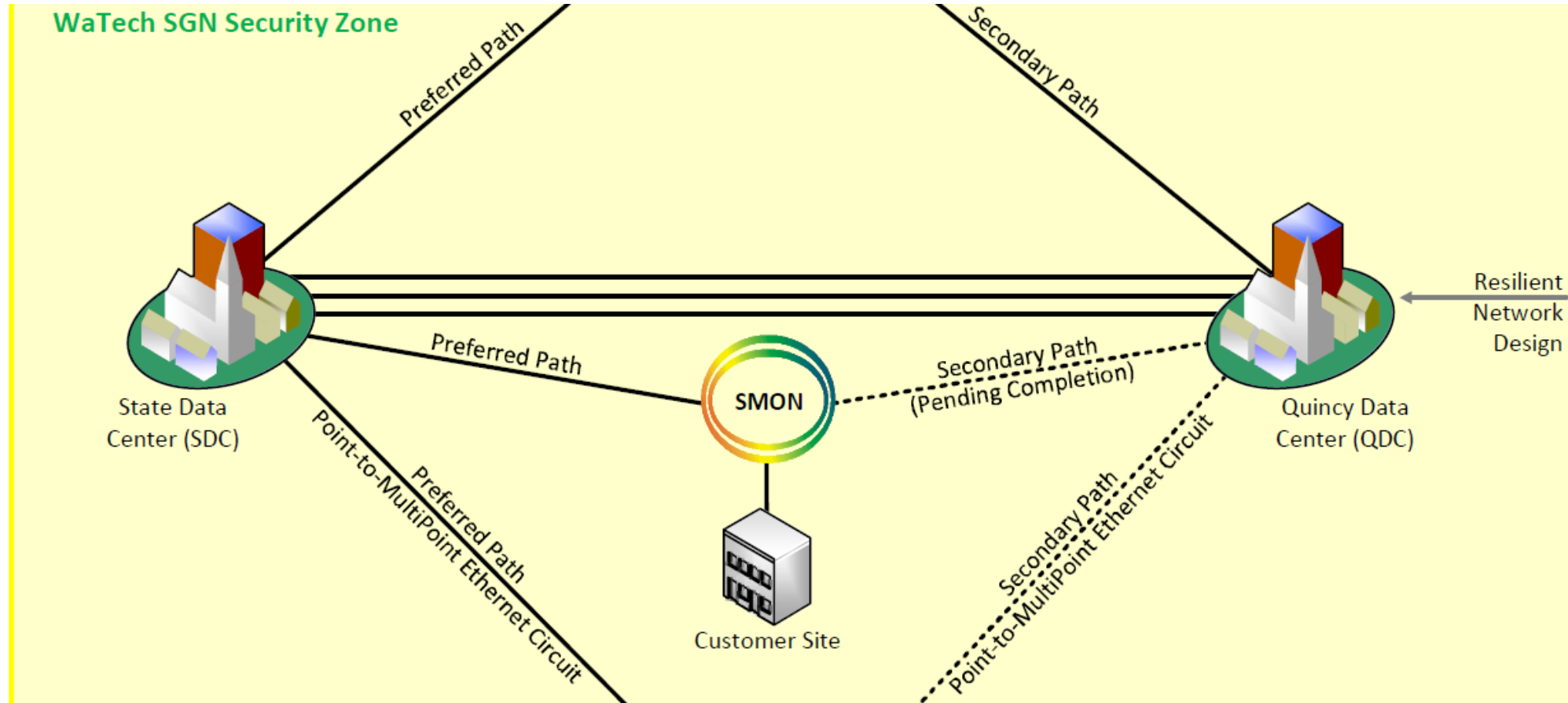


# Customer Point of Presence



This represents a state agency's point of view reflecting the SGN security zone & the legend used for the next three slides.

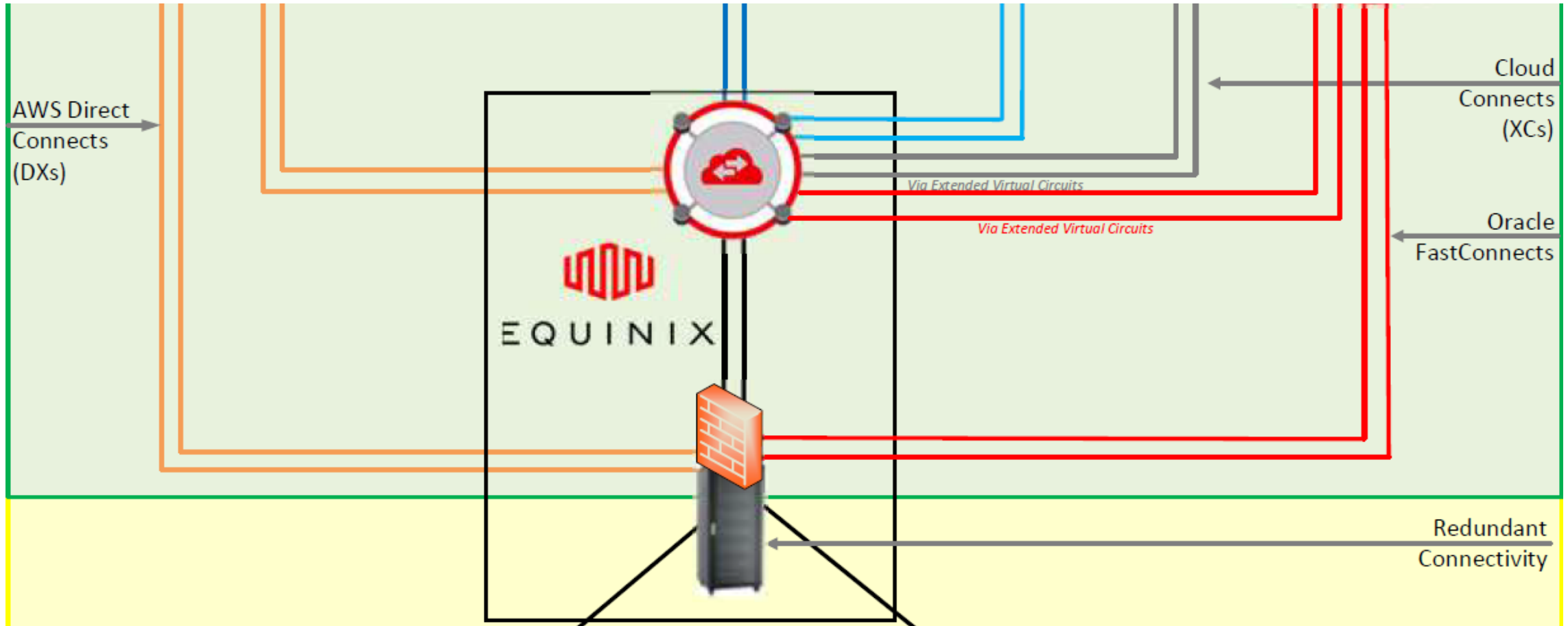
# State Data Center Points of Presence



This represents the SGN security zone illustrating the connectivity of the state's data centers with respect to the SMON for situational awareness.

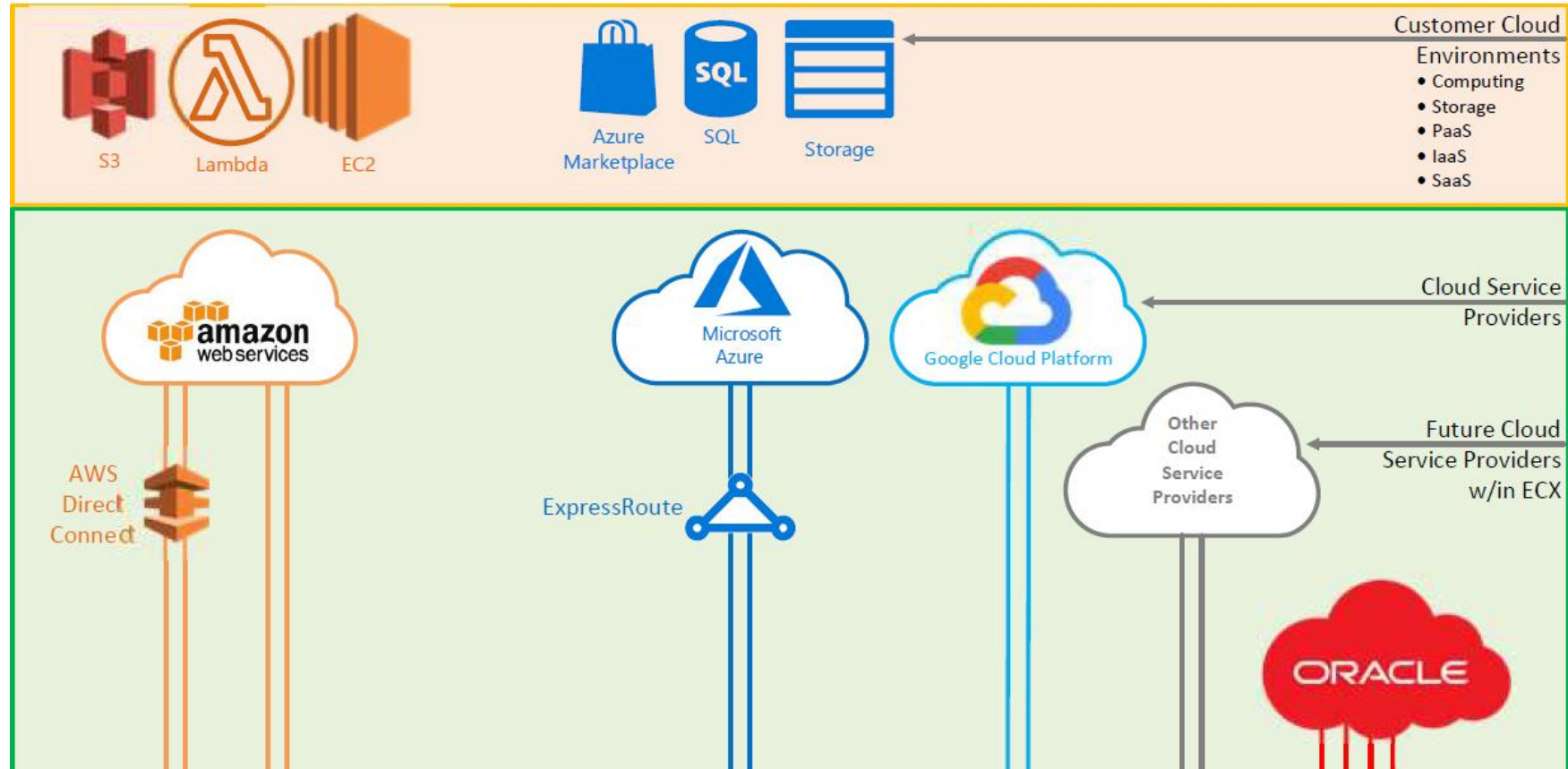


# WaTech's Point of Presence in Seattle

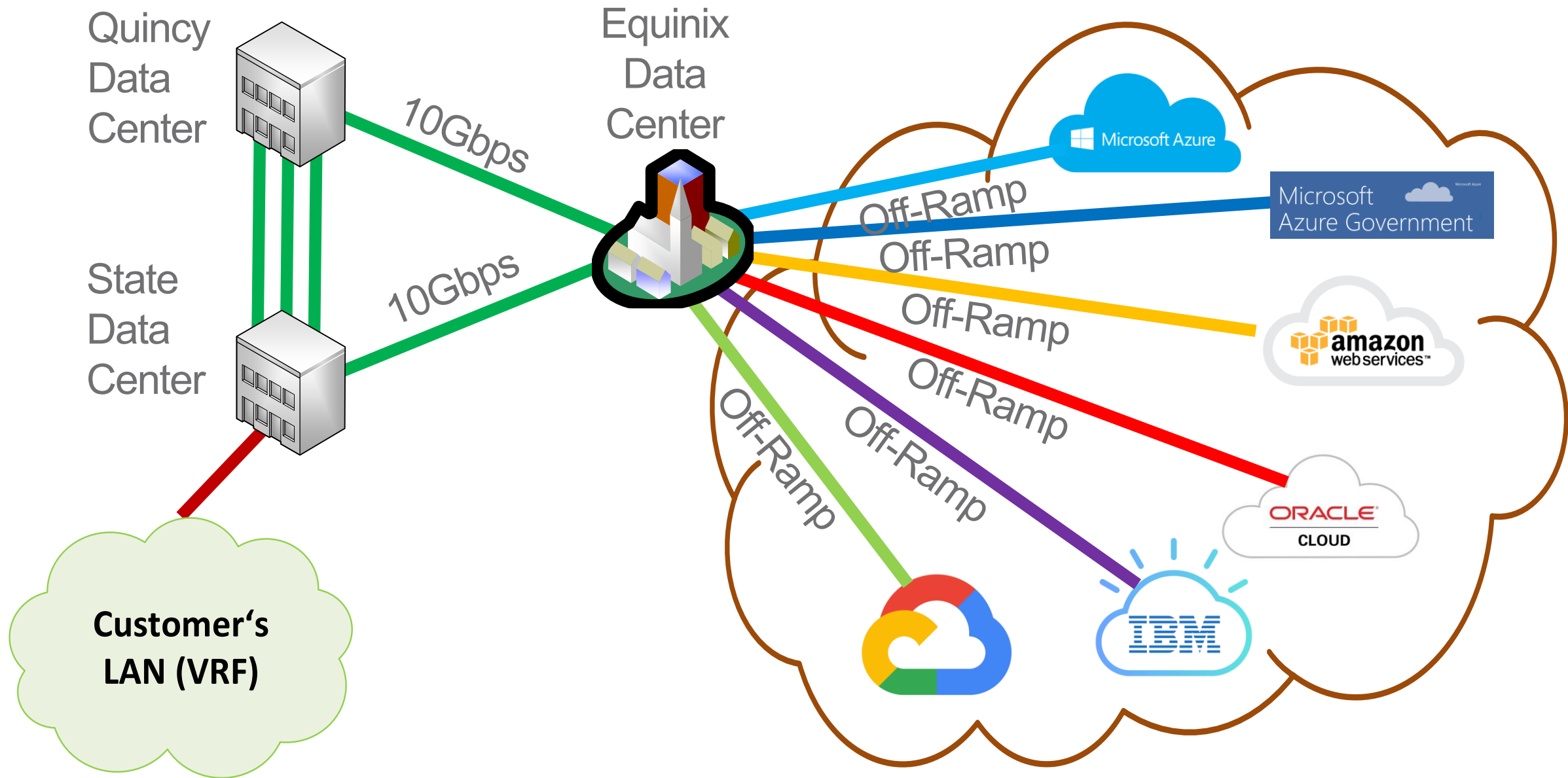


This represents the connectivity in the Equinix Data Center in the Seattle Westin.  
Direct Connects & FastConnects = Fiber patch cables

# Cloud Provider Points of Presence



This represents the general connectivity to the cloud service providers & the cloud services & capabilities they provide.



# Cloud Highway Value Propositions



# Service Value Proposition – Benefits & Advantages

- **Scalable:**
  - Easily scales per customer demand\*
- **End-to-End Support:**
  - WaTech's Network Operations Center available 24/7/365
  - Internet support is extremely limited
- **Partnership: WaTech is your Network Design Consultant**
  - United front in completing an OCS Security Design Review
  - Sanity check for how customer cloud environments connect to WaTech's Cloud Highway

# Service Value Proposition

## – WaTech Security

- **“The Security of the SGN”** (Leverages carrier-class security infrastructure that safeguards the SGN).
- **OCS compliance** (OCIO Standard 141.10).
- Only required security layers are used (Firewalls & IPS). Internet connectivity requires additional security layers which can impact performance, speed, customer experience, & your lines of business.
- **“Templatized”** OCS-approved traffic flows shopping menu.

*Note: standard agency peering “may not pertain to HQ hairpin designs”*



# Service Value Proposition – Performance

- **Predictability:**
  - Routing Traffic Flows Hop-by-Hop
  - Not an inherent trait of the Internet
- **Latency: contractually  $\leq 15$  ms**
  - Not an inherent trait of the Internet
- **Packet Loss:**
  - Ethernet connectivity used to ensure no packet loss and error-free transmission (no guarantees inherent to the Internet)

# Service Value Proposition

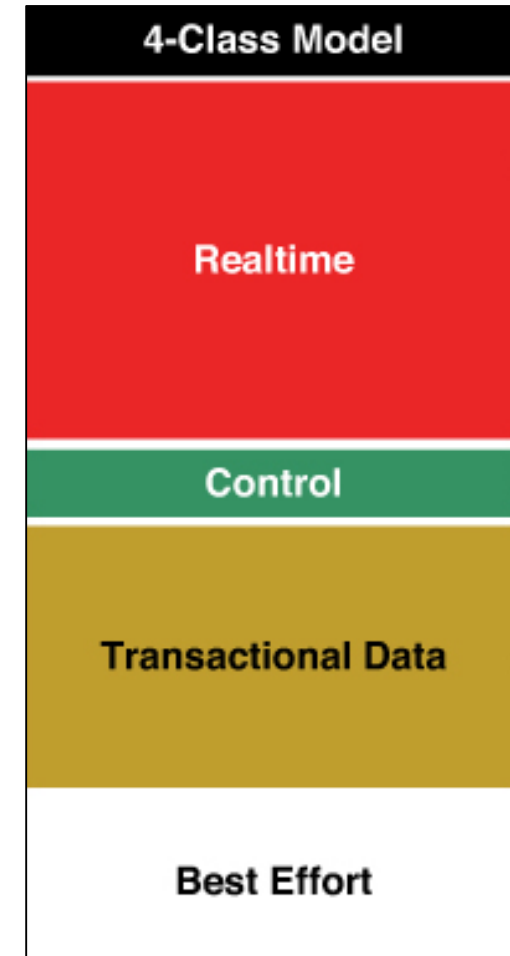
## – Performance (cont'd)

- **Availability (Uptime):**
  - 99.9% [excluding planned maintenance]
  - Not an inherent trait of the Internet
  - Internet uptime is best effort
- **Bandwidth Customization**
  - Aligns with the bandwidth tiers of Microsoft & AWS
  - 50Mb, 200Mb, 500Mb, 1Gb, 2Gb, 3Gb (AWS only), 4Gb (AWS only), 5Gb (MS only)

# Service Value Proposition

## – Performance (cont'd)

- **Quality of Service (QoS):**
  - Supported to the Front Door of the Cloud Service Providers like Azure & AWS.
  - Not an inherent trait of the Internet nor most other vendor solutions:
    - Class of Service (Layer 2 – frames)
    - Quality of Service (Layer 3 – packets)



# Service Value Proposition

## – AWS Performance Testing

- **Performance Tests:**

- Over a 1 week timeframe to/from Boardman, OR & the SDC

- **Results:**

- **Jitter**  $\leq 1\text{ms}$  (Cloud Hwy 75% ↓ than the Internet)
  - **Latency**  $\leq 13\text{ms}$  (Cloud Hwy 50% ↓ than the Internet)
  - **Throughput** w/o IPSEC (Cloud Hwy = 896 Mbps)
  - **Throughput** w/ IPSEC (Cloud Hwy = 620 Mbps)
  - **Hop-Count** 8 (Cloud Hwy 68% ↓ than the Internet)

Note: continuous polling used during a typical week.

# Service Value Proposition

## – Azure Performance Testing

- **Performance Tests:**
  - Over a 1 week timeframe to/from Quincy, WA & the SDC
- **Results:**
  - **Jitter**  $\leq 1.5\text{ms}$  (Cloud Hwy 57% ↓ than the Internet)
  - **Latency**  $\leq 10\text{ms}$  (Cloud Hwy 48% ↓ than the Internet)
  - **Throughput** w/o IPSEC (Cloud Hwy = 905 Mbps)
  - **Throughput** w/ IPSEC (Cloud Hwy = 656 Mbps)
  - **Hop-Count** 7 (Cloud Hwy 59% ↓ than the Internet)

Note: continuous polling used during a typical week.

# Service Value Proposition

## – Cost Benefit Analysis

- **Cost Efficiency:** Leverages the State's Economies of Scale (resulting in greater savings to the State)
- **Cost-Sharing** of state infrastructure, architecture, & resources
- **Cost-Avoidance:** Keep more money in your pockets to advance your business(es)
- **Timeline:** Currently working with multiple customers & meeting customer timelines & expectations



# Service Value Proposition

## – Cost Benefit Analysis (cont'd)

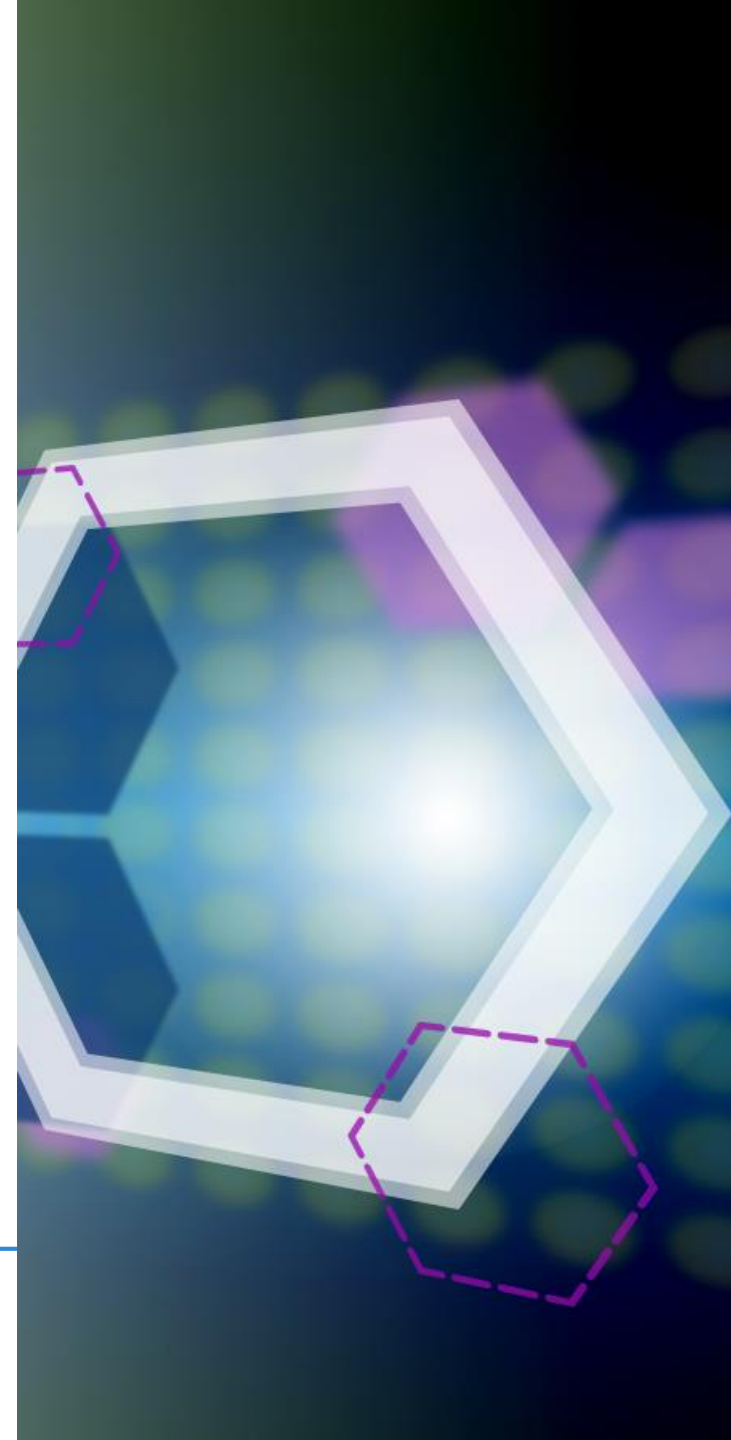
Egress Fees (data transfer OUT) via the Internet =

- Azure is 8.7¢ per Gb
- AWS Commercial (S3) is 9¢ for 1 Gb < 10 Tb

Egress Fees (data transfer OUT) via the Cloud Highway =

- Azure is 2.5¢ per Gb
- AWS is 2¢ per Gb

# Cloud Highway Cost Models



# Cloud Highway Rates (Service Capacity Tier)

Cloud Highway Capacity Tier	Monthly
50 Mb	\$200
200 Mb	\$775
500 Mb	\$1,925
1 Gb	\$3,925
2 Gb	\$7,850
3 Gb	\$11,775
4 Gb	\$15,700

# Cloud Highway Off-Ramp Rates

## *~Cloud Virtual Circuits*

Cloud Virtual Circuits	Monthly	One-Time
50 Mb	\$110	\$600
200 Mb	\$175	\$600
500 Mb	\$300	\$600
1 Gb	\$475	\$600
2 Gb to 10 Gb	\$2,750	\$600

**Note:** Cloud Virtual Circuits are only applicable with the Equinix Cloud Exchange.

# Cloud Highway Off-Ramp Rates

## *~Cloud Cross Connects*

Cloud Cross Connects	Monthly	One-Time
Cross Connect	\$460 each	\$1,200 each

**Note:** Only if required; customers are encouraged to not assume that you will need this expense. This will be discussed & flushed out during the formulation of a High-Level Design.

# Allocated Virtual Environments

- 5x Routing Tables (VRF) per Allocated Agency
- 3x Virtual Firewall (VDOM) per Allocated Agency
  - Of which only 2 are managed by WaTech

Additional Costs	Monthly
Routing Table (VRF)	\$2,750 each
Virtual Firewall (VDOM)	\$1,750 each

**Note:** Only if required.



# Cloud Highway Architecture & Consulting Fee

Architecture & Consulting Fee	One-Time
Engineering, Design, & Implementation	\$8,100

## Deliverables:

- High-Level [Connectivity] Design
- Low-Level Design
- Implementation Processes & Documentation

# Customer Responsibilities

- Costs associated with Customer Cloud environment(s)
  - AWS & Microsoft costs
  - Direct Connects (AWS) & Express Routes (MS)
  - Egress fees associated with Cloud Service Providers
  - Any Additional Cloud Services
- Work with selected cloud service providers
- Determine if additional back-up services are needed via WaTech's Cloud VPN Service (additional \$285 MRC per tunnel)

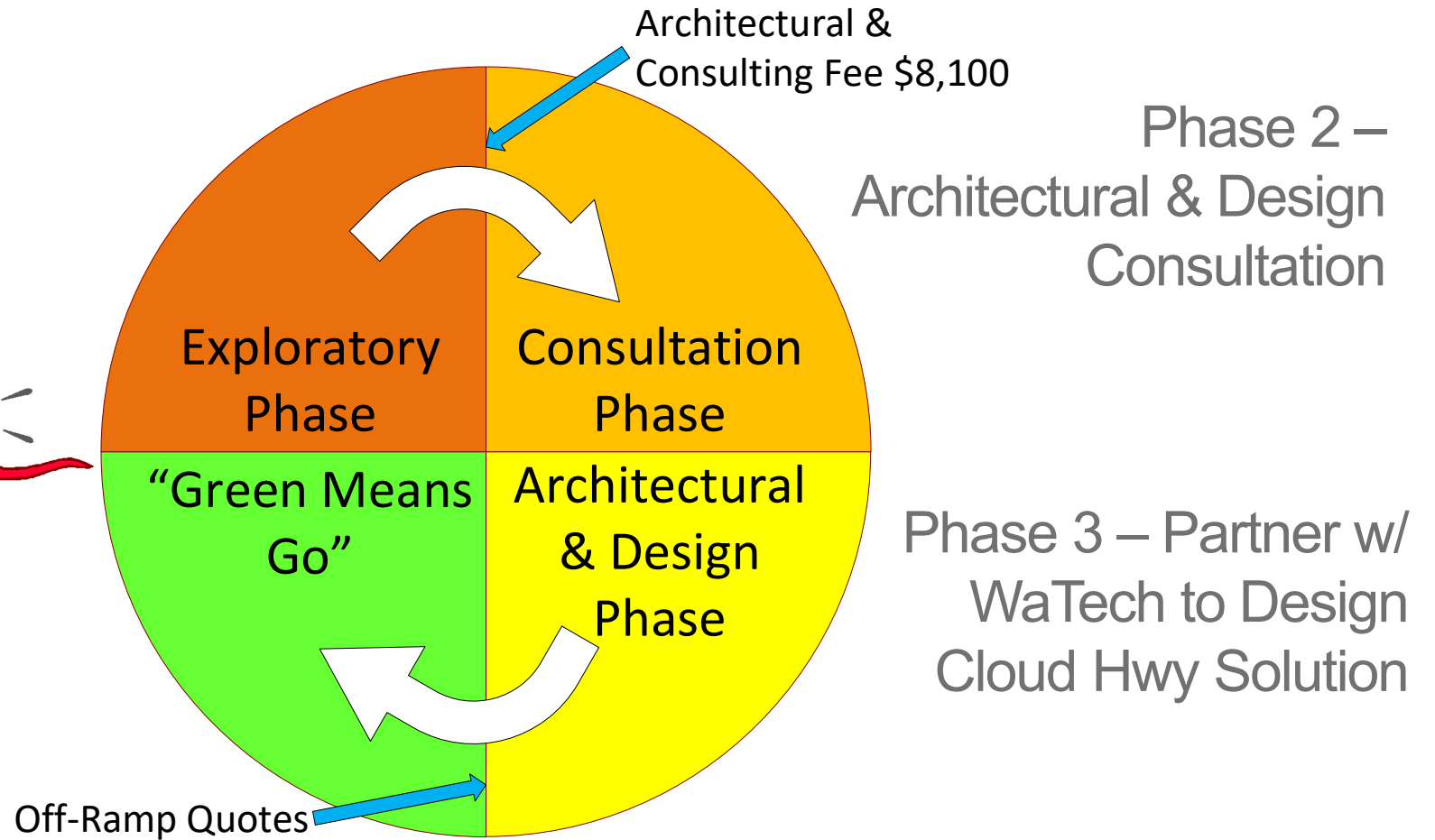
# Cloud Highway Onboarding Process

Phase 1 –

Informational Consultation  
w/ WaTech (no charge)

Phase 4 –

Start Taking  
advantage of Cloud  
Services



# How does a customer get started?

Contact WaTech's Support Center – Press Option 0

A graphic for the WaTech Support Center. It features a purple header with the text "WaTech Support Center" in white. Below the header is a dark blue section with the phone number "855.WaTech1 or (360) 586-1000" in white. Underneath the phone number is a list of options: "Press 1 for Secure Access Washington (SAW)", "Press 2 for WebEx or Conference Bridge", "Press 3 for Applications and Desktop Support", and "Press 0 for All Other Requests". At the bottom of the dark blue section is the email address "Support@WaTech.wa.gov" in white. The entire graphic is set against a light green background.

**WaTech Support Center**

**855.WaTech1 or (360) 586-1000**

Press **1** for Secure Access Washington (SAW)  
Press **2** for WebEx or Conference Bridge  
Press **3** for Applications and Desktop Support  
Press **0** for All Other Requests

**Support@WaTech.wa.gov**

# Cloud Highway Service Webpage

**URL ref:** (<https://watech.wa.gov/solutions/it-services/Cloud-Highway>)

